

REMARKS

Reconsideration of the application is respectfully requested for the following reasons:

1. Amendments to the Claims

Claim 1 has been amended to clarify that the first search is to find the signal representation containing the section that is substantially identical with the first search key representation. Use of the word “find” to describe the process of locating a copy of the search key representation if found, for example, in line 30 on page 5 of the original specification, and therefore the amendment does not involve “new matter.”

2. Rejection of Claim 1 on the Ground of Nonstatutory Obviousness-Type Double Patenting

This rejection has been overcome by submission of a Terminal Disclaimer, attached hereto.

3. Rejection of Claims 1-3 and 6-10 under 35 USC §102(b) in view of U.S. Patent No. 6,088,455 (Logan)

Initially, it is noted that the first sentence of item 7 on page 6 of the Official Action only mentions claims 1-3 and 6. However, it is clear from item 12-14 on page 9 that the Examiner also intended to include claims 7-10 in this rejection. The following traversal is therefore of the rejection of each of claims 1-3 and 6-10 under 35 USC §102(b).

The principal reason for traversing the rejection is that the Logan patent fails to disclose or suggest a method of processing received media signals in such a way that unwanted signal components are removed and remaining signal components are saved, in which:

- a. a first search key representation is chosen from the received media signals (for example, a radio listener might select a “clean” (*e.g.*, without voice-overs) portion of a song that he or she hears on the radio);
- b. a search track is searched for a section which is essentially identical with the first search key representation (in the case of a song, the “search track” might be a later broadcast that

- contains the song and the “section” found during search of the search track would be the same portion of the song that was selected by the listener);
- c. comparing segments which lie before and after the section which is essentially identical with the first search key representation; and
 - d. finding and storing a common segment (the common segment is presumed to be clean version of the original song since voice-overs and the like will change while the song remains the same).

According to the invention, a clean portion of an otherwise corrupted version of a broadcast program or song is used as a key to locate later broadcasts of the same program or song, and in particular sections of the later broadcast that are identical to the key. As illustrated in Figs. 4, 5, and 6 of the application, the clean portions of the program or song can be expanded by capturing additional portions of the program or song that are identical to each other, both before and after the portion of the program or song used as the search key.

In contrast, instead of using a *portion* of a received program or song that does not contain unwanted signal components as a search key, Logan pre-stores an entire clean version of a program or song as a template in order to remove undesirable signal components from subsequent media signals. Logan’s method involves comparison, but the comparison looks for **deviations** from a template, and removal of the deviations, rather than a search for subsequent media signals with **common segments**.

Even though the claimed invention shares with Logan’s system the use of keys to identify related media signals, Logan concerns an entirely different problem than the claimed invention, with an entirely different result. Whereas Logan seeks to match received signals against a template that does not include any undesirable signals, so that the undesirable signals can subsequently be removed, the claimed invention captures a media signal that includes **unidentified undesirable signals** (claim 1 specifically recites “**said media signals (1) containing unwanted signal components**”) and seeks to identify the undesirable signals utilizing the principle that desired signals will repeat and undesirable signals will not (**the Examiner will**

note that claim 1 recites “finding a first common segment (44)” based on the comparison, and storing said common segment (44) in said memory domain as a signal representation (70) without unwanted signal components”). Rather than subtracting common segments to extract noise, as in Logan, the claimed invention actually looks for and stores the common segments, in order to locate pure programming or songs *without* the need for a template of the type used by Logan.

Taking the example of a song on the radio, the Logan pre-records the song, and then compares the originally pre-recorded song and checks subsequently received versions of the song against the pre-recorded original for undesired signals such as voice overs. In contrast, the claimed invention records a song that might or might not have undesirable signals, and then checks for common segments in subsequently received versions of the song in order to identify the common segments, which are assumed to belong to the song and not to a voice-over. In effect, the claimed invention is the converse of Logan’s templating method, which starts with a nose-free song in order to identify noise, rather than comparing programs or songs having unwanted signals in order to extract program or song portions that do not include the unwanted signals, as claimed.

According to the invention, a user can be listening to the radio, hear a song that he or she likes, and then hit a button to begin the key selection process. The next time the song is played, the device will identify the song based on the key and then check for common segments, which are saved as part of an uncorrupted version of the song. According to variations of the invention, the search may begin with previously stored but unidentified signals (for example, from previous broadcasts), as recited in claim 2, with further searches being carried out if no match for the key is found, as recited in claim 3. Further, for previously stored signals, certain steps can be taken to reduce the amount of storage required, such as only using every N:th sample of a signal representation as the search track or track to be searched, as recited in claim 7.

In each case, the claimed invention starts with a media segment *which may contain unwanted components, and seeks to identify portions of the segment that do not contain the unwanted components* (i.e., the common segments), whereas Logan begins with a pre-stored media signal that is known to **lack** any undesired components, the pre-stored media signal being used as a template not for the identification of desirable components through identification of common segments, but rather for the tailoring of subsequent media signals to user preferences.

According to the method of Logan, if a deviation is found between a broadcast signal and an identification signal (the pre-recorded media signal, described in col. 9, lines 27-40 of the Logan patent), this is seen as an indication that there are some unwanted components present in the broadcast version of the signal. The proposed means to remove these components are to perform a modulation of the amplitude of the signals to achieve a fade-in effect that allows the music to start with a reduced volume that grows louder during the presence of the unwanted signal components. This has nothing to do with the claimed invention, which does not require storage of an uncorrupted version of an “identification signal,” and does not process corrupted versions of the signal in order to, in effect, hide them. The claimed invention only saves segments of a program or song that are common to multiple representations of the program or song—the longer the better. If the device of the invention searches long enough, it will eventually be able to save most if not all of the program or song.

It is noted that in order for Logan to fully take into account user preferences, it needs to know the nature of the undesirable signal components. They may, for example, represent voice-overs, commercials, jingles, *etc.*, so that the user can, for example, select advertisements for elimination and keep the voice overs. The claimed invention makes no such distinctions. Instead, it seeks to identify the song itself, rather than the interruptions, so as to save the song. Differences between segments could have a variety of different sources, and the claimed invention does not need to identify them (although it conceivably could). What is important to the invention are the common segments, which indicates parts of the song itself.

Because of the fundamental differences between the claimed invention and the system of Logan, and in particular the fact that the claimed first search key is selected in a first media signal “containing undesirable signal components,” rather than as part of a pre-recorded clean media signal, the invention using the key to search for subsequent media signals that include common segments rather than to identify undesirable components of subsequent media signal, it is respectfully submitted that the Logan patent does not anticipate the claimed invention, and withdrawal of the rejection of claims 1-3 and 6 is respectfully requested.

4 Rejection of Claim 4 Under 35 USC §103(a) in view of U.S. Patent Nos. 6,088,455 (Logan) and 7,076,102 (Lin)

Initially, it is respectfully noted that the Lin patent is number 7,076,102 and not 7,067,102 as indicated in item 17 on page 10 of the Official Action (7,067,102 is not by Lin and has nothing to do with speech processing or segment recognition).

The rejection is respectfully traversed on the grounds that the Lin patent, like the Logan patent, fails to disclose or suggest a method of identifying segments of a media signal that do not contain unwanted signals, as claimed, by:

- choosing a search key in a media signal that contains unwanted signal components;
- searching for a signal representation containing a segment that is substantially identical to the search key; and
- comparing before-and-after segments of the media signal and the signal representation to identify common segments,

as recited in claim 1, from which claim 4 depends.. Instead, the Lin patent is directed to processing of an image using “Hidden Markov models” to recognize complex motion patterns in a video image, and thereby recognize certain events in an area being monitored (such as a person falling). Lin’s method does not involve any sort of search key or search track, much less the elimination of redundant signal representations from a search track.

Although the Examiner does not identify where Lin discloses the claimed removal of redundant signal representations, it is believed that the following passage is the “teaching” referred to by the Examiner: *“Once the branching subroutine 400 has formed the branching structure(s), Step 230 is repeated during step 270 for each path that represents one possible manifestation of the event, so that the number of nodes along that path can again be optimized according to the objective function. Step 270 serves to remove redundant representations in the model, by comparing the objective cost function of each path.”* **This has absolutely nothing to do with the claimed invention.** Basically, Lin teaches that when creating a framework of defining events and calculating all of the paths between “nodes” in the framework, paths that start and end at the same place should be eliminated. The paths being eliminated are neither signals nor a part of any sort of search track, much less redundant signal representations in a search track containing a segment that is identical to a search key, as claimed.. Even if one of ordinary skill in the art would somehow have thought to combine the teachings of Lin and Logan (*i.e.*, to apply teachings concerning the **elimination of paths between nodes of a Hidden Markov Model** to Logan’s noise elimination method), the result would not have been the claimed invention. As a result, withdrawal of the rejection of claim 4 under 35 USC §103(a) is respectfully requested.

5 Rejection of Claim 5 Under 35 USC §103(a) in view of U.S. Patent Nos. 6,088,455 (Logan) and 4,602,297 (Reese)

This rejection is respectfully traversed on the grounds that the Reese patent, like the Logan patent, fails to disclose or suggest a method of identifying segments of a media signal that do not contain unwanted signals, as claimed, by choosing a search key in a media signal that contains unwanted signal components; searching for a signal representation containing a segment that is substantially identical to the search key; and comparing before-and-after segments of the media signal and the signal representation to identify common segments, as recited in claim 1, from which claim 4 depends.

As noted in the previous response, instead of being directed to finding and saving common segments so as to eliminate unwanted signals, the Reese patent is directed to a method

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of finding and deleting repeated segments by removing unwanted material between transition frames. This is exactly contrary to the invention recited in claim 1, which is to find and store repeated (common) segments, the repeated segments being signals that the listener desires to save. Even though Reese, like the claimed invention, uses time intervals or frame to identify commercials, Reese's whole disclosure is directed to the elimination of commercials, whereas the claimed invention eliminates commercials (and other short representations that are not likely to be the subject of a search) in order to clean up the "search track" before the actual search (which is not suggested by Reese) even begins. Furthermore, the commercials in Reese are discrete entities defined by transition frames rather than voice-overs that must be separated from desired programming whose content may only partially be known, and therefore Reese addresses an entirely different technical problem than the claimed invention. As a result, withdrawal of the rejection of claim 5 under 35 USC §103(a) is respectfully requested.

Having thus overcome each of the rejections made in the Official Action, expedited passage of the application to issue is requested.

Respectfully submitted,

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